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Annual Review and Forecast

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Composite telecom industry poised to spend $31 billion in 1984

DEL MYERS, EDITOR, and CZATDANA INAN, MARKET RESEARCH DIRECTOR

TELECOMMUNICATIONS equipment/construction expenditures for the restructured and composite telecommunications industry in 1984 are elusive and volatile figures. Estimates are plentiful but the data supporting them can be manipulated at its source or destination to match virtually any desired result.

The data which yielded TELEPHONY's estimate of $30.82 billion (see Table 1) mainly came from the major segments of the industry which have given us their best estimates. A few regulated companies did not supply information, claiming it to be proprietary, and competitive entities understandably withheld information that might aid and comfort the competition.

Also, any data collected during this tumultuous phase of telecommunications may contain a promotional factor that should but cannot be factored out.

Since the $31 billion figure exceeds the $29 billion estimate for 1983 (TELEPHONY, Jan. 10, 1983, p. 26), TELEPHONY's Research Dept. has challenged the data and compared apparent discrepancies with other research organizations, such as Northern Business Information, Inc., New York.

Most importantly, deregulation and divestiture have obscured or severed the historical track between this annual review and forecast and those of previous years. Attempting to backtrack is an exercise that ranges from frustrating to impossible.

Of the projected $30.82 billion expenditure, the regional Bell companies (RBCs) account for $13.919 billion; Independent telephone companies, $5.34 billion; long distance companies, $3.45 billion and business communications equipment for voice and data, $8.115 billion. (TELEPHONY's 1983 forecast did not include data communications. Therefore, the $3.6 billion estimate for data communications must be subtracted from the 1984 forecast in order to compare it with the 1983 forecast.)

The Independent telephone companies' forecast of $5.34 billion is close to the 1983 forecast of $5.1 billion and actual spending of $4.99 billion.

These figures, based on TELEPHONY's survey of the major Independents (see Tables 2 and 3), reflect a conservative attitude and tight management controls during this period of uncertainty over the source and size of future telecommunications revenue streams.

The five largest holding companies include only 22% of the Independent operating companies but they account for 87% of Independent revenues, 85% of Independent plant investment and 85% of Independent actual and projected spending during

Table 1. U.S. Telecommunications Construction Expenditures ($000,000 omitted)

	Independents	Regional Bell Companies	AT&T Communications *	Specialized Common Carriers	Business Customer Premises Equipment
1984	5,340	13,919	1,850	1,600	8,115**
1983	4,990	13,681	1,100	1,500	5,500
1982	4,825	15,604	1,200	800	n/a
1981	4,852	16,849	1,300	400	n/a
1980	4,544	16,354	n/a	n/a	n/a
1979	4,205	15,172	n/a	n/a	n/a
1978	3,471	13,172	n/a	n/a	n/a

** Includes $4.5 billion for voice communications equipment; $3.6 billion for data communications equipment.

* AT&T Communications was AT&T Long Lines prior to 1984

Cover art by Leon Dantlovics

Spending is up, but "comparability" is down in spending survey.

Table 2 Major Independents' Construction Expenditures and Other Statistics

	Total CO Switches (Actual)				% Digital				Total Equipped Lines (000 Omitted)				% In Service				Construction Expenditures ($000,000)			
	1984	1983	1982	1981	84	83	82	81	1984	1983	1982	1981	84	83	82	81	1984	1983	1982	1981
GTE	3,117	3,111	3,095	3,097	14%	9%	4%	3%	13,853	13,652	13,032	12,429	nr	nr	87%	90%	$2,833.0	$2,462.0	$2,772.0	$2,701.0
United	1,200	1,191	1,186	1,183	25	20	13	10	3,199	3,082	2,974	2,869	91%	90%	89	88	564.1	513.2	523.9	580.5
Continental	2,242	2,075	1,945	1,908	45	27	21	17	2,348	2,260	2,211	2,100	94	94	94	94	502.5	474.5	430.5	407.3
Centel	381	384	381	375	35	31	26	16	1,410	1,394	1,341	872	86	84	84	88	168.1	172.0	185.5	194.4
ALLTEL	537	537	523	520	24	19	15	10	933	921	906		86	85	84	85	145.0	145.5	148.4	125.5
Puerto Rico Tel	111	109	106	101	39%	29%	25%	15%	658	621	604	551	79%	79%	77%	81%	118.0	108.0	71.1	113.1
Rochester Tel	65	67	66	65	nr	nr	3	2	488	478	462	457	89	92	93	93	51.4	40.7	44.2	53.6
Century Tel Enterprises	179	149	145	142	10	9	8	6	238	237	237	230	85	83	82	81	40.0	31.0	34.4	28.6
Lincoln Tel	141	141	141	141	21	16	14	13	230	229	225	224	85	86	86	84	32.1	31.7	35.4	37.0
Telephone & Data Systems	175	172	164	163	20	11	7	1	191	187	174	162	84	84	83	83	26.5	31.0	36.1	24.5
Commonwealth Tel	76	76	76	76	33%	24%	22%	18%	170	165	160	155	86%	85	85%	85%	21.9	16.7	13.1	12.2
Pacific Telecom*	147	140	127	112	59	53	47	26	188	184	160	157	96	86	87	89	93.0	104.0	176.5	86.5
Anchorage Tel	11	11	11	10	50	42	33	27	156	148	124	118	76	72	77	73	27.5	30.1	39.1	22.6
Citizens Utilities	44	44	43	43	21	18	14	12	104	103	96	85	77	74	74	78	25.1	24.9	30.3	35.2
Illinois Consolidated	38	38	38	37	8	8	3	0	89	88	88	83	86	84	82	85	12.6	11.0	22.8	12.6
North State Tel	9	9	9	9	22%	11%	0%	0%	71	69	67	65	88	88	90	94	5.0	6.5	5.6	6.6
Concord Tel	nr	nr	nr	nr	11	0	0	0	71	70	69	67	86%	85%	84%	84%	5.5	2.3	2.7	5.9
North-West Tel	27	27	27	28	41	41	33	25	60	59	58	57	85	81	81	80	7.5	6.8	8.6	8.7
Universal Tel	57	60	58	58	11%	7%	5%	3%	47	46	44	41	90%	89%	87%	93%	5.6	6.0	8.4	11.2
North Pittsburgh Tel	9	9	9	9	33	0	0	0	40	40	39	39	85	84	83	80	6.0	5.5	5.4	nr
Denver & Ephrata Tel	6	6	6	6	37	0	0	0	38	34	33	33	81	86	85	83	6.0	3.0	2.1	2.4

*Includes Alascom, long distance carrier purchased in 1982

the 1981-1984 period of time (see Tables 2, 3 and 4).

These five companies also account for 74% of the 11,000 Independent central offices and 94% of the 21.7 million Independent access lines (see Tables 5 and 6).

The Independent telephone companies are replacing electromechanical switches with stored program controlled time division (digital) switches at a very rapid rate. At the end of 1981, 10% of the central offices in the 10 largest Independent companies had digital switches. By the

Table 3 Major Independents' Revenues and Other Statistics

	Total Revenues ($000,000)				Total Expenses ($000,000)				Plant Investment ($000,000)				Employes (Actual)	
	1984	1983	1982	1981	1984	1983	1982	1981	1984	1983	1982	1981	1983	1982
GTE	nr	nr	7,824.0	6,874.0	nr	nr	5,215.0	4,436.0	26,084.0	24,212.0	22,601.0	20,666.0	117,000	123,200
United	2,070.0	1,960.0	1,830.0	1,650.0	1,350.0	1,250.0	1,150.0	1,010.0	5,730.0	5,440.0	5,190.0	4,370.0	23,776	24,996
Continental	1,508.5	1,435.8	1,327.8	1,181.8	1,217.0	1,162.3	1,062.9	932.2	4,283.1	4,121.9	3,830.5	3,557.5	14,079	15,205
Centel	756.5	718.8	691.2	634.4	475.4	456.3	442.9	405.1	2,125.6	2,035.3	1,977.7	1,895.1	8,453	8,964
ALLTEL	493.5	449.9	399.2	346.9	353.1	322.7	305.4	263.3	1,708.0	1,594.9	1,478.1	1,358.4	5,507	5,618
Puerto Rico Tel	352.8	334.9	296.1	248.3	262.1	235.5	218.0	192.9	1,208.1	1,165	1,037.5	996.7	6,266	5,934
Rochester Tel	252.3	238.5	222.3	204.8	140.2	131.7	125.7	114.3	643.1	605.6	581.6	564.3	nr	2,491
Century Tel Enterprises	105.4	98.4	92.1	76.7	83.0	77.4	71.4	58.4	369.5	325.9	306.7	276.2	1,260	1,224
Lincoln Tel	127.2	121.1	116.0	109.0	85.7	83.4	79.0	69.1	371.4	350.4	336.0	320.6	1,784	1,926
Telephone & Data Systems	nr	nr	70.5	60.6	nr	nr	52.3	43.7	nr	nr	271.0	220.8	1,375	1,370
Commonwealth	nr	nr	56.9	50.9	nr	nr	32.2	30.4	nr	nr	203.4	195.1	nr	654
Pacific Telecom*	399.0	375.0	341.0	278.1	315.0	286.0	274.0	224.1	1,104.0	810.0	749.1	589.4	3,000	2,651
Anchorage Tel	105.8	103.5	85.5	71.7	72.3	64.7	61.4	56.7	185.8	174.0	156.7	132.1	805	798
Citizens Utilities	88.4	75.8	68.6	60.3	70.7	61.2	51.4	43.8	292.0	264.7	238.5	206.6	816	830
Illinois Consolidated	53.6	53.7	48.9	41.0	36.1	37.7	35.8	29.3	139.3	129.7	128.2	108.3	600	732
North State Tel	34.1	31.9	27.0	22.6	18.4	17.3	16.1	13.6	81.5	77.5	71.7	68.2	474	472
Concord Tel	23.5	21.6	20.1	19.5	13.8	13.3	12.8	12.0	69.0	65.0	61.7	58.9	337	337
North-West Tel	26.2	24.7	23.2	22.8	19.5	18.7	17.8	17.0	88.0	86.5	85.3	81.7	275	285
Universal	22.0	20.3	18.6	16.6	11.5	11.0	10.9	8.2	72.0	70.0	67.1	62.5	265	266
North Pittsburgh	22.5	21.7	18.2	15.4	19.5	17.5	14.4	13.4	57.2	55.3	53.4	51.7	nr	nr
Denver & Ephrata	15.5	13.2	10.6	9.2	8.0	6.8	5.5	4.7	15.5	13.2	10.6	9.2	137	125

Note: Puerto Rico Communications Authority and Virgin Islands Telephone Corp. though 19th & 24th, respectively in rank are not included

*Includes Alascom, long distance carrier purchased in 1982

end of 1984, this figure will increase to 26%, a substantial increase, because these 10 companies account for 80% of the Independent central offices.

This large increase in the deployment of digital switches is significant but should be seen in perspective: It is occurring in Independent territory with a total number of 21.7 million access lines, only 20% of the nation's 108 million access lines.

Digital switches are, of course, essential elements in the creation of an integrated digital network (IDN) which may become the long-awaited and much-discussed integrated services digital network (ISDN). However, digital switches currently are being installed for their favorable economics instead of future ISDN potential.

In 1983, the number of Independent companies decreased from 1400 to 1375, continuing a long-established trend. The rate of decrease is very slow, because the most economically attractive properties are not for sale or already have been acquired.

A more significant step in a new direction, though hardly a trend, is the merger of Mid-Continent Telephone Corp. and Allied Telephone Co. into a new entity, ALLTEL Corp. This new and larger company may fit more easily in a new telecommunications world dominated by giant holding companies—the RBCs, GTE, United Telecom and the like.

A tough job

Comparing the projected and actual expenditures of the Independents over the past several years is much easier than comparing AT&T's pre- and post-divestiture figures. Even the designation of the successor companies complicates the comparison because once-consolidated data now must be broken into many parts. Presenting it clearly is difficult and the presentations in this article are not cluttered with explanatory notes. Some data for the RBCs and AT&T anticipate their legal advent on Jan. 1, 1984; other data may treat the embedded customer premise equipment as the property of the RBCs although it also was transferred to AT&T Information Systems (AT&T-IS) on Jan. 1. Moreover, the Federal Communications Commission's Computer II decision almost completely barred the Bell operating companies from participation in the CPE market throughout 1983, a fact not mentioned in these data.

Most of the AT&T information for this review and forecast came from the company's "Information Statement and Prospectus," a document published in November 1983 to explain the divestiture plan. The document presents some of the information as if the divestiture had occurred June 30, 1983, and candidly states that "actual results achieved during the forecast period will vary from the

Continued on page 41

Table 4 Independent Telephone Company Composite Plant Statistics ($000,000 omitted)

	Station Apparatus	Station Connections	Large PBXs	Central Office Equipment	Buildings
1982	$3.234	$3.951	$977	$13.863	$2.330
1981	3.220	3.763	959	12.648	2.143
1980	3.102	3.428	928	11.420	2.024
1979	2.919	3.016	853	10.128	1.826
1978	2.536	2.606	726	8.964	1.644
1977	2.275	2.296	660	8.170	1.523
1976	2.058	2.032	599	7.543	1.439
3 Year Growth					
1979-1982	11%	31%	15%	37%	28%
1976-1979	42%	48%	42%	34%	27%

	Aerial Cable	Buried Cable	Underground Cable	Underground Conduit	Vehicles & Work Equipment
1982	$3.794	$5.961	$1.801	$1.054	$864
1981	3.493	5.401	1.594	947	804
1980	3.269	4.857	1.408	885	717
1979	2.979	4.166	1.245	766	641
1978	2.698	3.655	1.082	665	551
1977	2.516	3.219	976	607	460
1976	2.360	2.851	910	567	404
3 Year Growth					
1979-1982	27%	43%	45%	38%	35%
1976-1979	26%	46%	37%	35%	59%

	Gross Plant Investment	Operating Revenues	Number of Independent Operating Companies	Employes
1984	$50.000	$16.000	1.375	183.000
1983	45.555	15.222	1.400	186.000
1982	41.500	13.880	1.432	192.100
1981	38.298	12.206	1.459	197.200
1980	35.300	10.475	1.483	194.000
1979	31.664	9.240	1.488	190.000
1978	27.788	8.085	1.527	179.000
1977	25.130	7.115	1.566	167.000
1976	23.000	6.300	1.590	160.000
3 Year Growth				
1979-1982	31%	50%	-4%	-1%
1976-1979	37%	47%	-6%	19%

Table 5 Independent Telephone Company Access Lines and Central Office Statistics

	Access (Main) Lines			Central Offices by Service Type					
	In Service	Installed	Removed	SXS	XB	Analog	Digital	Other	Total Exch.
1982	21.672.219	4.401.701	4.183.053	67%	10%	5%	12%	6%	11.074
1981	21.428.802	4.031.152	3.506.617	70%	10%	5%	9%	6%	11.086
1980	20.808.167	4.406.063	3.333.026	73%	11%	4%	5%	7%	11.040
1979	20.078.325	4.237.567	3.400.400	75%	11%	4%	2%	8%	11.050
		17.076.483							
		-14.423.096	14.423.096						
	1.593.894	2.653.387							
Net Growth	8%	15% New							
		85% Replacement							

financial forecast, and that variations may be material. Because of extensive divestiture-related changes, forecast information lacks comparability with historical results."

This statement, necessary for the protection of investors, has a corollary in the data that spans the pre- and post-divestiture period: It, too, lacks comparability.

In 1984, for example, the RBCs' projected construction expenditure of $13.9 billion seems comparable to the reported expenditure of $13.8 billion in 1983 (see Tables 1 and 7). However, the total AT&T construction expenditure forecast for 1983 was $16.8 billion (TELEPHONY, Jan. 10, 1983, p. 26), a figure that

Table 6 Independent Telephone Company Installed Telephone Base (000 omitted)

	Total Telephones	%TT	Access Lines	Business Lines	Business Ext.	Resident Lines	Resident Ext.	PBX Extensions
1982	34,347	26%	21,672	2,870	2,800*	17,754	9,400*	2,4[illegible]*
1981	35,127	23	21,429	2,715	2,753	17,110	9,292	2,434
1980	34,527	22	20,808	2,747	2,680	16,182	9,089	2,379
1979	33,109	19	20,078	2,605	2,512	15,445	8,626	2,311
1978	31,472	16	19,246	2,321	2,327	15,801	8,083	2,180
1977	29,610	12	18,345	2,174	2,156	15,106	7,355	2,069
1976	28,123	9	17,538	2,025	2,002	14,619	6,749	2,017
3 Year Growth								
1979-1982	4%		8%	10%	11%	15%	9%	4%
1976-1979	18%		15%	29%	25%	2%	28%	15%

%TT—Percent of TouchTone instruments to total company-owned telephones.

Table 7 Regional Bell Companies Composite Plant Statistics and Construction Expenditures ($000,000 omitted)

Operating Revenues	Nynex	Bell Atlantic	BellSouth	Ameritech	Southwestern Bell	U S West	Pacific Telesis	Total
1984 Estimated $	9,825.2	8,323.1	9,799.1	8,344.0	7,754.9	7,436.8	8,082.1	$ 59,565.2
1983 12 Months/June 30	10,006.6	8,732.3	10,512.6	8,900.8	7,859.5	7,596.1	7,895.9	61,503.8
1982 Actual $	9,868.3	8,367.7	10,288.2	8,723.8	7,711.1	7,396.2	7,855.5	60,210.8
% Local Service	55%	50%	48%	56%	46%	43%	39%	
% Toll Service	43%	45%	49%	40%	49%	53%	58%	
1981 Actual $	8,641.4	7,500.3	9,206.3	8,070.5	6,782.4	6,789.0	6,818.9	53,808.8
% Local Service	54%	50%	46%	55%	45%	42%	38%	
% Toll Service	43%	45%	50%	44%	50%	53%	59%	
Operating Expenses								
1984 Estimated $	6,590.4	5,589.5	6,453.0	5,546.6	5,249.5	4,997.2	5,800.1	40,226.3
1983 12 Months/June 30	6,643.6	5,884.9	6,834.6	5,837.4	5,276.5	5,070.4	5,812.3	41,359.7
1982 Actual $	6,501.4	5,779.5	6,721.3	5,937.9	5,243.0	5,028.8	5,788.9	41,000.7
1981 Actual $	5,703.6	5,077.4	5,996.6	5,445.3	4,501.7	4,511.6	5,016.2	36,252.4
Operating Income								
1984 Estimated $	1,423.2	1,404.2	1,784.3	1,326.1	1,304.5	1,263.8	1,330.1	9,836.2
% Net	65%	68%	69%	70%	67%	70%	62%	
1983 12 Months/June 30	1,530.6	1,475.4	1,994.0	1,457.6	1,374.3	1,338.1	1,276.3	10,446.3
% Net	67%	71%	70%	71%	65%	68%	77%	
1982 Actual $	1,472.8	1,372.6	1,939.3	1,347.7	1,328.2	1,257.7	1,305.7	10,024.0
%Net	66%	68%	70%	69%	65%	67%	66%	
1981 Actual $	1,365.7	1,307.3	1,764.1	1,324.1	1,203.4	1,233.1	1,237.6	9,435.3
% Net	66%	64%	66%	64%	65%	66%	36%	
Telecom Plant Assets	15,186.3	14,596.3	19,081.6	14,409.5	14,112.0	13,767.8	14,493.8	105,647.3
% Total Assets	87%	90%	92%	89%	91%	91%	90%	
% Central Office Equipment	37%	44%	29%	33%	33%	33%	36%	
% Land & Buildings	9%	11%	9%	10%	9%	9%	7%	
% CPE wiring and equipment	15%	18%	13%	15%	13%	17%	14%	
% Connecting Lines	30%	27%	43%	37%	38%	32%	36%	
Construction Expenditures								
1984 Operating Groups	2,002.0	1,714.5	2,373.7	1,694.0	1,813.0	1,837.0	2,189.0	13,623.2
Cellular Mobile	21.0	28.9	31.9	49.0	17.0	80.0	68.0	295.8
1983	2,085.0	1,891.0	2,486.6	1,739.0	1,983.0	1,696.0	1,800.0	13,680.6
1982	2,158.3	2,094.7	2,749.8	1,757.0	2,295.0	2,113.0	2,436.0	15,603.8
1981	2,163.9	2,229.0	3,044.4	2,021.0	2,243.0	2,391.0	2,757.0	16,849.3
1980	1,979.4	2,213.6	3,152.5	2,093.0	2,217.0	2,244.0	2,455.0	16,354.5
1979	1,728.1	2,012.5	2,889.0	2,010.0	2,217.0	2,101.0	2,214.0	15,171.6
1978	1,460.7	1,671.3	2,612.5	1,822.0	1,943.0	1,910.0	1,752.0	13,171.5
Employes								
1984 Actual Number	98,200	80,000	99,100	79,000	74,700	75,000	82,000	588,000

Note: This table is based on the AT&T Information Statement and Prospectus, Nov. 8, 1983. This document treats the divestiture as though it had occurred on June 30, 1983.

Table 8 Regional Bell Companies Access Line and Telephone Statistics (000 omitted)

	Access Lines					Telephones		
	1983	1982	1981	1980	1979	1982	1981	1980
Nynex								
New York	8,300	8,211	8,210	8,071	7,926	10,390	11,678	11,871
New England	4,500	4,341	4,266	4,162	4,050	7,105	7,109	7,072
	12,800	12,552	12,476	12,233	11,976	17,495	18,787	18,943
Bell Atlantic								
New Jersey	3,973	3,844	3,758	3,660	3,542	6,546	6,619	6,554
Bell of Pennsylvania	4,495	4,474	4,445	4,379	4,288	7,633	7,950	7,964
C&P—District of Columbia	748	725	716	692	664	1,070	1,091	1,103
Maryland	2,178	2,107	2,070	2,029	1,959	3,514	3,605	3,563
Virginia	1,908	1,839	1,815	1,756	1,689	3,007	3,109	3,076
West Virginia	636	627	621	624	617	945	975	979
Diamond	309	303	297	287	276	531	540	534
	14,247	13,939	13,722	13,427	13,035	23,246	23,889	23,773
BellSouth								
South Central	6,211	6,079	6,008	5,869	5,737	10,388	13,034	10,573
Southern	7,380	7,155	6,921	6,725	6,431	12,672	10,674	12,697
	13,591	13,234	12,979	12,594	12,168	23,060	23,708	23,270
Ameritech								
Illinois	4,631	4,599	4,624	4,589	4,474	8,070	8,430	8,554
Indiana	1,384	1,373	1,378	1,366	1,345	2,482	2,618	2,664
Michigan	3,630	3,602	3,607	3,611	3,605	6,069	6,279	6,339
Ohio	2,893	2,882	2,883	2,868	2,833	4,756	5,001	5,071
Wisconsin	1,475	1,475	1,479	1,466	1,433	2,194	2,360	2,488
	14,013	13,931	13,971	13,900	13,690	23,571	24,688	25,076
Southwestern Bell								
Arkansas	625	609	606	601	586		1,016	1,033
Kansas	940	921	912	886	859		1,665	1,654
Missouri	1,780	1,757	1,750	1,731	1,705		3,069	3,072
Oklahoma	1,270	1,263	1,236	1,179	1,130		2,165	2,089
Texas	5,670	5,574	5,277	4,969	4,719		9,068	8,834
	10,285	10,124	9,781	9,366	8,999	16,903	16,983	16,682
U S West								
Mountain	4,757	4,656	4,718*	4,501*	4,278*	7,676	8,094	7,860
Northwestern	3,323	3,278	3,270	3,223	3,147	5,431	5,655	5,687
Pacific NW	2,488	2,453	2,450	2,402	2,318	3,616	3,863	3,935
	10,568	10,387	10,438	10,126	9,743	16,723	17,612	17,482
Pacific Telesis								
Pacific	10,715	10,409	10,275	9,926	9,533	15,071	16,372	16,157
Nevada	163	158	154	145	134		263	257
	10,878	10,567	10,429	10,071	9,667	15,071	16,635	16,414
	86,382	84,734	83,796	81,717	79,278	136,069	142,302	141,640
% +/− Previous Year	+2.0%	+1.1%	+2.5%	+3.1%		−4.4%	−.5%	

*Amounts for 1979-81 include El Paso County, Texas, operations sold to Southwestern Bell in 1982.

should be comparable to the 1984 combined forecast of the RBCs and AT&T Communications (formerly AT&T Long Lines)—a total of $15.8 billion. The reported spending of these two entities for 1983 is $14.8 billion.

An exact reconciliation of these figures probably would be less meaningful than carefully weighing them against this statement from the AT&T Information Statement and Prospectus: "The Bell System's total construction expenditures for tariffed telecommunications services for the nine months ended September 30, 1983 were $9.6 billion compared to $12.5 billion for the same nine months in 1982. These reduced expenditures reflect not only the three-week strike in August but also tight control of capital budgets and increased utilization of facilities already in place."

This statement should be taken at its face value: divestiture will not spark an AT&T or RBC spending spree. These new companies are positioning themselves for the long run, not a sprint. *How* they are structured and staffed and *where* they concentrate expenditures will be the most important signs of their endurance and prospects.

All of the former monopoly carriers know that the only telecommunications game in town lies in their former exclusive preserve. Although competition and innovation stimulate telecommunications consumption, only AT&T, the RBCs and the Independents are destined to lose market share.

This makes the composition and distribution of facilities such as switching centers, access lines, Centrex service, PBXs, key systems and the like of crucial importance to every entity. Therefore, this review and forecast includes Tables 8-10, which present statistics on access line terminations, business telephones and the like. These statistics reveal the substantial success of competitors in penetrating the former monopoly preserve: From January 1980 through September 1983, the net growth in PBX trunks was 43%. Only 44% of this net growth terminated in AT&T/RBC equipment while 56% terminated in customer-owned equipment.

Historically, the Bell System has replaced two existing business telephone systems for each completely new one installed. This "churn" in the embedded base cannot be counted as growth although it is an important factor in the mature U.S. telecommunications market. Approximately 15% of the embedded base PBXs will be replaced each year—a very attractive opportunity for competitors.

Seventy-two percent of RBC main lines terminate in residential telephones with customers owning 17% of them; AT&T-IS, 83%. Business telephones, key telephones and stand-alone key systems are the terminations for 16% of the main lines, of which only 17% terminate in customer owned equipment.

New ways

This "mass" telecommunications market will be served quite differently than it was in the days of the end-to-end monopoly service. Retail outlets progressively will take over the residential market as the customers begin to doubt the conventional wisdom of perpetually leasing low-cost telecommunications equipment like standard telephones.

Similarly, retailers, including small business equipment specialty stores, are handling communications equipment. Small, sophisticated systems

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Table 9 Regional Bell Companies' Business and Residential Statistics ($000,000 omitted)

Telco-owned telephones

	Total Telephones	Extensions Business	Centrex CO	Centrex CU	PBX	Residential
1982	136,069	8,212	6,265	1,027	10,410	40,494
1981	142,386	8,656	6,520	1,258	10,087	43,873
1980	141,674	8,707	6,439	1,480	9,642	44,070
1979	138,172	8,569	6,118	1,643	9,330	42,665
1978	133,346	8,256	5,635	1,772	9,232	40,709
1977	128,459	7,743	5,023	1,903	9,162	38,935
1976	123,131	7,340	4,410	1,935	9,292	36,454
3 Year Growth						
1979-1982	-2%	-4%	2%	-37%	12%	-5%
1976-1979	12%	16%	39%	-15%	-1%	17%

Telco-owned main lines and equivalent main lines terminating in telco-owned equipment

	Total Access Lines	Business Lines	Centrex CO Lines	Centrex CU Trunks	PBX Trunks	Residential Lines
1982	86,382	11,430	5,320	149	1,724	58,041
1981	84,734	11,709	5,441	152	1,612	60,283
1980	83,796	11,596	5,305	163	1,517	59,741
1979	81,717	11,273	4,985	175	1,454	58,574
1978	79,278	10,827	4,508	179	1,454	57,005
1977	76,303	10,396	3,975	195	1,437	55,298
1976	73,135	9,949	3,442	194	1,456	53,751
3 Year Growth						
1979-1982	6%	1%	7%	-15%	19%	-1%
1976-1979	9%	13%	45%	-10%	-1%	9%

Telco-owned main lines and equivalent main lines terminating in customer-owned equipment

	Business Lines	PBX Trunks	Residential Lines
1982	1,553	589	3,260
1981	1,058	454	677
1980	740	348	181
1979	521	272	69
1978	348	207	20
1977	220	163	14
1976	145	121	8
3 Year Growth			
1979-1982	198%	117%	4600%
1976-1979	259%	125%	763%

designed for the take-it-with-you, plug-it-in customer already are available.

The trend is clear: During the 1960-1970 period, the Bell System added two residential telephones for each access line added. By early 1982, the ratio was reversed: two telephones lost for each added line. Clearly, access lines now are the only accurate measure of telecommunications service with respect to population in the U.S. And, with the deregulation of CPE, its removal from the rate base, and the transfer of the embedded CPE base from the RBCs to AT&T-IS, tracking either residential or business access line terminations soon will be an impossible task.

The number of business access lines that are lost to bypass will be more difficult to detect unless there is a sudden mass exodus of large business users from the network. Neither competitors nor the telephone companies, however, need to count the access lines in order to identify potential bypass candidates: They are the highly visible large businesses, usually concentrated in small geographical areas.

The RBCs—or any telco—will not let them go without a fierce struggle. Indeed, the strategy of the RBCs already is clear: They will bypass their own local exchange company rather than lose a customer to alternate network providers. And the RBCs also intend to share in the CPE market that again opened to them on Jan. 1, 1984.

The strategy of the local exchange company also is clear: During 1983, most of the construction news described projects upgrading the capability of the local business loop plant. An appropriate mix of T-carrier and fiber optic technology is being extended to the relatively small number of business customers who require high-speed data communications. Competitors hoping to "cream skim" in this market face a more difficult task than did those who successfully penetrated the high-volume, long distance voice market.

Nynex, for example, has a large concentration of service firms in its territory—27 of the top 30 security firms, 6 of the Big 8 accounting firms, 12 of the top 50 life insurance companies and 13 of the 50 largest banks. New York Telephone derives 25% of its revenue from only 1% of its business customers. Nynex has an 800-person sales organization to make sure that its large business customers are not easy pickings for any competitor. The company will offer a range of proven and popular business communications equipment to large and small customers. And the company has stated that it will bypass its operating companies rather than lose revenues to competitors.

Other RBCs take the same stance. Southwestern Bell Corp. has 1250 wire centers in its network, 5 of which account for 10% of the company's data communications revenues. Ten percent of the centers account for 66% of this class of revenues—a powerful incentive to innovate and to deploy advanced technology to hold this base. The company has 70% of its lines served by electronic switches, compared with the RBC average of 55%. The company's five-state area contains 12% of the U.S. population and accounted for 26% of housing starts in 1983.

Bell Atlantic currently plans to concentrate its sales effort on equipment; Ameritech has announced a multi-million dollar program to upgrade Centrex to digital service, thereby reducing operating expense and the incentive for users to own their own equipment. U S West already has established a subsidiary to provide engineering, consulting, maintenance and installation services.

And officials of this company, too, have said, "We are beginning to bypass ourselves."

Pacific Telesis, in spite of well-

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publicized problems, has a unique territory: 1 in every 10 California homes has a personal computer, twice the national average. This company also has business customers concentrated in relatively small areas. Seventeen percent of them generate approximately 80% of its business toll calls.

BellSouth, located in the fastest growing section of the U.S., is positioned to grow with it. In its territory, population, personal income and new employment have grown at a rate substantially faster than the U.S. average rate. During the last 4 years, the combined assets of Southern Bell and South Central Bell have grown 47%; net income, 65%.

Jostling

As the RBCs reenter the CPE market through some type of subsidiary organization, they will be joining some 3000 firms competing for a share of the 1984 voice communications market estimated at $4.5 billion to $5.2 billion, and data communications market estimated at $3.6 billion.

In the voice communications area, manufacturers and interconnect companies will have a 50% share of the market; AT&T-IS, 29% and the RBCs, Independents and affiliated subsidiaries will share the remainder.

With such a mix of distribution channels, TELEPHONY arbitrarily has categorized them into six segments to avoid double counting and to facilitate referencing them:

- AT&T-IS—American Telephone & Telegraph Information Systems.
- RBCs—the regional Bell company subsidiary organizations.
- Independents—the marketing departments of Independent telephone companies.
- Independent subsidiaries—the structurally separate subsidiaries of Independent telephone companies.
- Manufacturers—the direct sales organizations or departments of manufacturers.
- Interconnect companies—the thousands of firms and dealers not structurally affiliated with any of the other distribution channels.

These distribution channel categories eliminate many sources of confusion but not all; for example, AT&T-IS is not the sole distribution channel for equipment manufactured by AT&T Technologies (formerly Western Electric). This assumption could be made since both companies belong to the same parent. Moreover, the term "interconnect" is inappropriate, because the conditions that once gave it meaning no longer exist.

Irrespective of distribution channel, the business communications marketplace is dominated by the products of a relatively few manufacturers: AT&T Technologies accounts for approximately 31% of the total PBX line shipments; Rolm, Northern Telecom and Mitel, 39%, and a host of competitors share the remainder of shipments.

TELEPHONY's 1984 survey of the business communications equipment supplier market concentrated on correlating the distribution channels with such data as customer base, average size of customer organization and type of equipment—a task that demanded the categorization previously described.

Manufacturer and Independent subsidiary customer bases mainly are firms having 50 or more employes;

Table 10 Regional Bell Companies' Line/Trunk Activity, Jan.-Sept., 1983

Installed	Removed	In Service 9/30/83		
8,330,061	11,782,595	51,482,483	**Residential**	Mains*
3,189,829	7,926,705	33,643,826		Extensions*
11,519,890	19,709,300	85,126,309		
47%	67%	59%		
1,770,836	2,027,587	11,039,658	**Business**	Mains*
862,274	1,353,467	7,663,159		Extensions*
2,633,110	3,381,054	18,702,817		
11%	12%	13%		
227,350	185,674	1,777,799	**PBX**	Trunks
889,832	1,317,125	9,960,752		Extensions*
1,117,182	1,502,799	11,738,551		
5%	5%	8%		
13,014	10,297	136,124	**Centrex CU**	Trunks
105,008	203,936	884,864		Extensions
118,022	214,233	1,020,988		
-1%	-1%	-1%		
995,679	999,163	5,305,968	**Centrex CO**	Lines
884,589	1,018,764	6,041,054		Extensions*
1,880,268	2,017,927	11,347,022		
8%	7%	8%		
1,327,586	594,321	3,162,984	**All Other Company-Owned Mains**	
5%	2%	2%		
5,904,356	2,038,371	12,996,408	**All Other CPE Mains**	
24%	7%	9%		
24,500,414	29,458,005	144,095,079	**Total Universe: Mains & Extensions**	
100%	100%	100%		

*Summed for AT&T annual report of total telephones

Table 11 Long Distance Revenues and Market Share

	Revenues ($000,000 Omitted)			Market Share		
	1983	1982	1981	1983	1982	1981
AT&T Communications	$23,500.0[3]	$21,404.0	$19,372.0	68%	70%	72%
Independents	8,300.0[3]	7,543.0	6,950.0	23%	25%	26%
				91%	95%	97%
MCI[2]	1,716.0	802.0	413.1			
GTE Sprint	620.0[3]	393.4	234.2	5%	3%	2%
ITT/USTS	200.0[3]	128.3	82.7			
U.S. Telephone	135.6	82.1	24.0			
Combined Network	146.1	34.6	1.8			
Satellite Business Systems	144.0	39.0	5.0			
Western Union/Metro-phone	50.0[3]	23.6	7.0			
	$34,811.7	$30,450.0	$27,089.9			

1. AT&T Communications (formerly AT&T Long Lines) figures are Bell System interstate revenues after payments to Independents.

2. MCI revenues are December-December, Form P 1981 & 1982, 1983 estimated. MCI fiscal year (March-March) revenues for 1981-1983 are $1,073 million, $506.4 million and $234.3 million, respectively.

3. Estimated by TELEPHONY.

Table 12 Fortune Companies' Headquarters Responsibility for Telecommunications Expenditures—1984-1985 ($000,000 omitted)

	1000 Industrials	300 Service Organizations	Median Average Anticipated Increase 1985 1000 Industrials	300 Service Organizations
Voice Communications				
Equipment	$3,376.2 24%	$1,160.0 20%		
Network Services	5,488.0 39%	2,196.0 38%	10%	10%
	$8,864.0	$3,356.2	10%	10%
Data Communications				
Equipment	$2,498.0 18%	$1,081.5 19%		
Network Services	2,753.0 19%	1,300.0 23%	10%	10%
	$5,251.0	$2,381.5	12%	10%

interconnect customer bases, smaller firms with 10-19 and 20-49 employes. Only 5% of the interconnect companies reported customer bases that include companies with 1-9 employes. This is a clear indication that these small establishments mainly are Centrex, key telephone or stand-alone key system customers—prime targets for interconnect sales.

Approximately half of the surveyed distribution channels are selling data communications equipment, mainly modems. Some reported that they also sell business and personal computers, printers and terminals. Manufacturers and Independent subsidiaries account for 64% of this group.

Approximately 15% of the survey questionnaires mailed to the interconnect companies were undeliverable in contrast to only 3% returned from the manufacturers and Independent subsidiaries. This undeliverable rate illustrates that competition is fierce and that the casualty rate of weaker firms is high.

Competition indeed is a sobering experience, as illustrated by the interconnect companies which lowered their 1983 prediction of a 40% to 60% increase in sales to a 1984 prediction of a 50% increase. Even this figure may contain a factor based on the hope that the Federal Communications Commission will kill Centrex service, thus forcing millions of small business users to obtain communications equipment from one of the distribution channels. Interconnect companies are pursuing this objective before the FCC through the North American Telephone Assn. (NATA). The powerful International Communications Assn. (ICA) opposes the NATA position.

Manufacturers and Independent subsidiary distribution channels expect to maintain their 1984 increase in sales at approximately the same median level as in 1983—29%.

The long distance communications companies' input for this review and forecast was brief and not always to the points desired (see Table 11). As competition for this huge and lucrative market intensifies, silence literally may be golden.

In 1983, total business communications expenditures were approximately $38.5 billion; in 1984, the amount will rise to an estimated $42.4 billion, of which the Fortune 1300 companies (1000 industrials and 300 service organizations) will account for $33.9 billion.

TELEPHONY's 1984 survey of the Fortune companies concentrated on quantifying the share of telecommunications expenditures directed by headquarters staff. The share is impressive—$19.9 billion of the total 1984 expenditure (see Table 12) will be controlled directly by the headquarters professional telecommunications staff. Under their control are approximately 60% of the Fortune company locations, the majority of which have 20 or more employes.

The question of whether or not large businesses will integrate voice and data communications responsibility now is moot: 53% of the industrial companies and 41% of the service organizations already have integrated departments (see Table 13.) And, if current plans are implemented, 73% of the industrial companies and 69% of the service organizations will have integrated voice-data communications departments by 1986.

Accompanying the departmental integration is the authority to integrate voice and data facilities; 53% of the industrial companies and 41% of the service organizations are considering purchase of integrated voice-data PBXs within the next 5 years and within a median range of 2 years.

A staggering 71% of the industrial companies and 60% of the service organizations are considering digital termination systems or other network alternatives, bypassing the local exchange telephone companies within the next 4 years but within a median range of 1 year!

Therefore, 1984 promises to be the telecommunications year that was!

The battle lines are drawn; objectives, clear; strategy, transparent. The contestants are in place and the struggle will be fierce.

Only those who are market wise, technically competent and financially strong will prevail. □

Table 13 Fortune Companies' Voice-Data Decisionmakers

	Voice Communications	Data Communications	Both Voice & Data Communications
Determine the Need			
Industrials	96%	53%	47%
Service Organizations	94%	47%	45%
Evaluate Equipment & Service			
Industrials	99%	71%	67%
Service Organizations	95%	62%	61%
Select Vendors			
Industrials	97%	59%	56%
Service Organizations	90%	50%	48%
Approve Purchases			
Industrials	63%	41%	38%
Service Organizations	59%	28%	27%
Not Involved			
Industrials	0%	4%	0%
Service Organizations	0%	5%	0%